22. IDENTITY OF THE LADYBEETLE, *EPILACHNA IMPLICATA* MULSANT, FROM INDIA (COCCINELLIDAE: COLEOPTERA)

(*With two figures*)

The ladybeetle, *Epilachna implicata* Mulsant, was first described in 1850 from India by Mulsant who regarded it as allied to *Epilachna vigintioctopunctata* (Fabr.) and superficially resembling a variety of the latter. He, however, pointed out the differences in respect of the disposition and sizes of the black elytral spots by which the two species could be distinguished from each other. In view of the almost infinite variation of spots in *E. vigintioctopunctata*, Crotch (1874) considered *E. implicata* to be a mere variety of the latter. This nomenclatorial status of *implicata* has ever since remained unchanged in literature, as may be seen in the works of Mader (1927) and Korschefsky (1931). Although Dieke (1947) gave a monographic account of *Epilachna* (*sens. lat.*) in Asia, Europe, and Australia, he made no reference to *implicata* either as an independent species or as a variety of *E. vigintioctopunctata* of which he gave an extensive account from India and elsewhere under the name *Epilachna sparsa* (Herbst).

Mulsant (loc. cit.) described *E. implicata* from the material in the collections of Germar and Schaum, Hope, Reiche, and Westermann. As was generally the practice in those days, he did not designate any single specimen as the 'type' or the 'holotype'. Consequently all the examples of *E. implicata* in the above-mentioned collections are syntypes. The one in Prof. Hope's collection at the Oxford University Museum was lately obtained on loan through the kindness of Prof. G. C. Varley. It tallies in the main with Mulsant's description and has, on detailed examination (including that of its genitalia), proved to be quite distinct from *E. vigintioctopunctata* or any of its known varieties. I have since designated this example as the 'lectotype' and give below a brief redescription of the species. The lectotype bears the locality label 'Mysore' and is a female.

Through the courtesy of Dr. M. Puttarudhriah, Government Entomologist, Department of Agriculture, Mysore State, I was also able to obtain some material of *Epilachna* spp. from Bangalore and found in it a series of nine examples of *E. implicata* collected from the cucurbit *Coccinia indica*. The material of *E. vigintioctopunctata* was on the other hand collected from solanaceous plants like the brinjal and potato. As both the males and females were represented in the above-mentioned series of *E. implicata*, a study was also made of the

male genitalia with a view to give further distinguishing characters of the species.

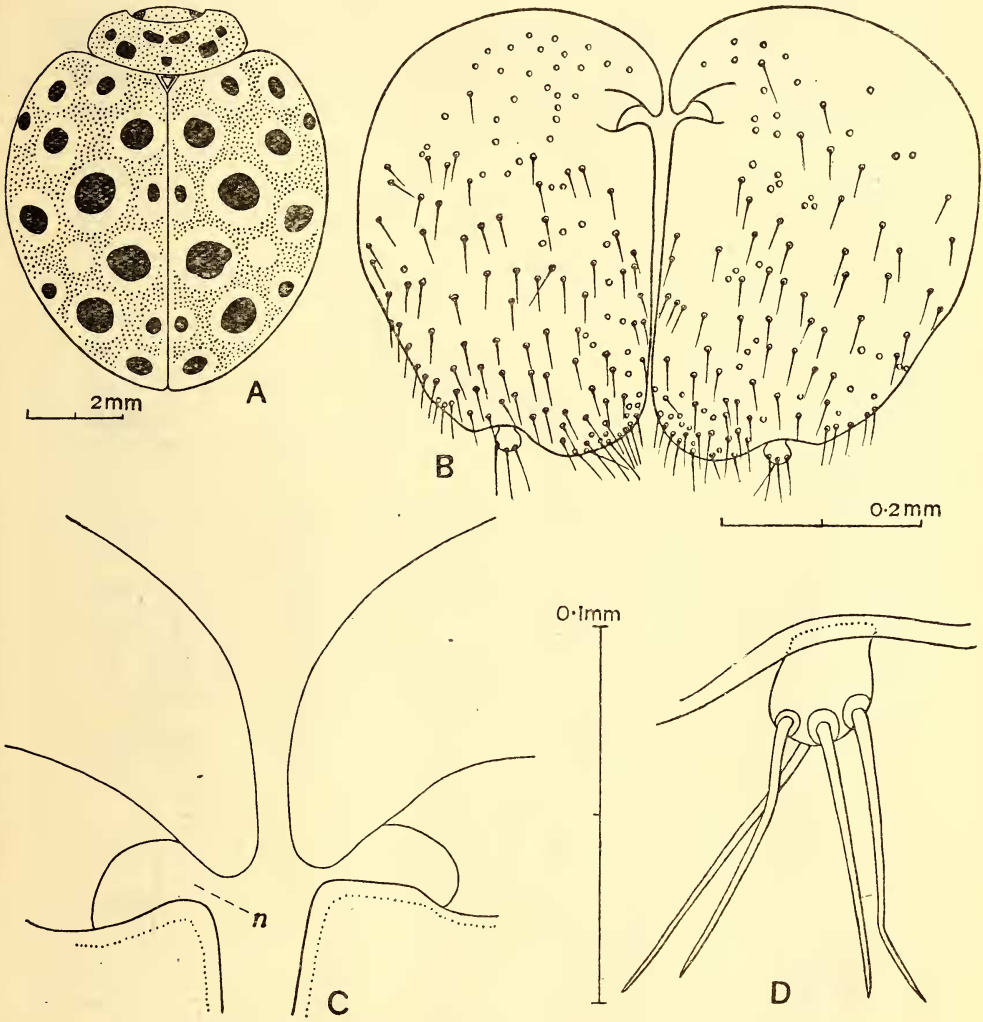

Figure 1. *Epilachna implicata* Muls. (♀, Lectotype).

A. Outline of body and pattern of markings. *B*. Female genital plates (ix sternite). *C*. Inner notches of the genital plates, much enlarged. *D*. Stylus of the genital plate, much enlarged.

0.1 mm. scale for figures C & D.

On account of the harmful association of *E. implicata* with *Coccinia indica*, the fruits of which are used as a vegetable, this ladybeetle is likely to feature in literature on economic entomology. It seems desirable, therefore, that its systematic position be clarified and its possible confusion with *E. vigintioctopunctata* avoided.

Epilachna implicata Mulsant

1850. *Epilachna implicata* Mulsant, *Ann. Soc. Agric. Lyon* **3**, pp. 837-838.

Body similar in general appearance to *E. vigintioctopunctata* but slightly larger, more convex and rounded; generally testaceous with the black spots on the pronotum and elytra of the lectotype as shown

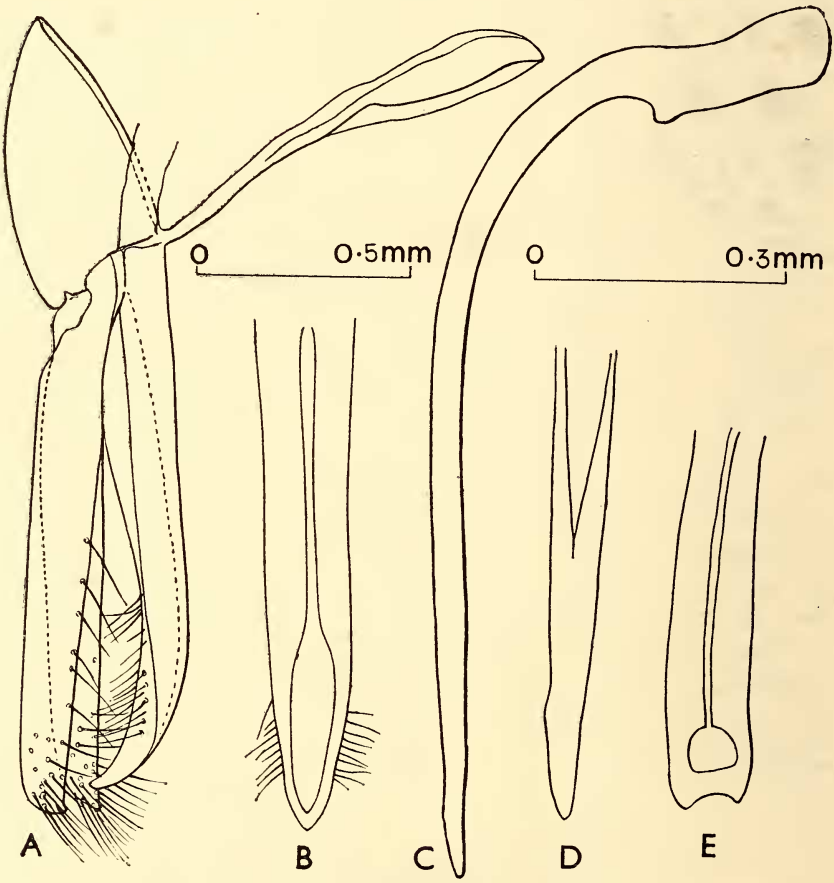

Figure 2. *Epilachna implicata* Muls.

A. Lateral view of external male genitalia except sipho. *B*. Outline of median lobe as seen from below. *C*. Sipho, lateral view; *D*. Apex of the same much enlarged; *E*. Apex of sipho seen from below, much enlarged. 0.5 mm. scale for figures A—C; 0.3 mm. scale for figures D & E.

in Figure 1, A; each elytral black spot invariably surrounded by a light yellow ring. In certain other examples instead of the seven pronotal spots as seen in the lectotype, only five (as a result of the coalescence of the central three spots into one) or six (as a result of

fading away of the posterior central spot) are present. Likewise instead of the thirteen black spots on an elytron, as in the lectotype, certain examples may have fourteen black spots, but in such cases the relative size and position of the spots remain almost unchanged. Underside with a pair of small, piceous spots on the metasternum and median three abdominal sternites. The lateral margins of pronotum are rounded anteriorly but gradually become subparallel in the posterior half. In *E. vigintioctopunctata,* on the other hand, the lateral margins are uniformly rounded. Another character by which the two species may be easily distinguished is that the apical angle of the elytron is rounded in *E. implicata* and distinct in *E. vigintioctopunctata.* It may, however, be mentioned that there are also other Indian species, e.g. *Epilachna dodecastigma* (Wied.) and *Epilachna septema* Dieke, in which the apical angle of the elytron is rounded. Caution must therefore, be exercised in distinguishing *E. implicata* on this character alone. The external genitalia offer the most reliable characters in identification of the species.

♀ *genitalia* (Lectotype): The female genital plates (Fig. 1, B) rounded proximally, slightly narrowed but rounded distally; length 0.44 mm., maximum width 0.31 mm.; the notch on the inner margin fairly deep, subrounded, with a narrow, slanting opening; an enlarged view of the same (Fig. 1, C) shows both the upper and lower lips of the opening (*n*). In the case of *E. vigintioctopunctata,* on the other hand, the notch in the genital plate is wide and the upper lip absent. The pear-shaped stylus (Fig. 1, D) at the distal end of the genital plate bears three or four long setae.

♂ *genitalia:* Sipho (Fig. 2, C) gently curved near the base, from then on straight and gradually narrowed distally to a point if seen in profile (Fig. 2, D). In this respect it is very similar to that of *E. vigintioctopunctata,* but can be easily distinguished from the latter when seen from below on account of its flattened surface and widely emarginate apex (Fig. 2, E). In *E. vigintioctopunctata* the apex of sipho is narrowed and pointed all round. Parameres and basal piece are nearly similar to those of the latter but the median lobe is quite distinctive; when seen in profile (Fig. 2, A). the underside of median lobe is straight in the basal two-thirds of its length and gently curved up to a pointed apex in the apical one-third; the upper side is with a narrow vertical blade-like ridge which starts at the base of the parameres and is gradually narrowed distally to end at the middle of the length of the median lobe; the distal half of the latter bears two rows of long hairs. Seen from below (Fig. 2, B) the median lobe looks like a closed and gradually narrowing tube with the seam along the

middle in the basal two-thirds of its length and an elongate-oval orifice in the distal one-third. In *E. vigintioctopunctata*, on the other hand, the median lobe, when seen in profile, is slightly emarginate at a little distance below the middle and then curved upwards into a hook at the apex; the blade-like ridge is also broader; seen from below the orifice of the median lobe is smaller and more or less diamond shaped.

The two species are thus easily distinguished from each other by several reliable characters and should be regarded as distinct.

ZOOLOGICAL SURVEY OF INDIA,
CALCUTTA, A. P. KAPUR, PH.D., D.I.C.
September 28, 1959.

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23. APHIDS OF CALCUTTA AND SUBURBS (WEST BENGAL)

INTRODUCTION

The first records of aphids from West Bengal were by Cotes (1896). Later van der Goot (1916, 1917) added some more species. It was not till 1955, however, that these insects received attention in this part of India and Banerjee and Basu recorded 13 species. In the same year in a review of the Entomological section of the Department of Agriculture, Government of West Bengal, a list of 26 species of aphids including the previous 13 was published.

Of the species so far known from West Bengal, 15 are found in Calcutta and suburbs including 2 new records, one of which has very recently been published by Ray Chaudhuri and Ghosh (1958). A list of such species with a preliminary key for some of them, is given below.

LIST OF SPECIES

Aphis L.

1. **A. craccivora** Koch—320 apterae, 5 alatae.

Locality & Host plant family: Cossipore Club, Calcutta, on 18-10-52, 25-10-52, 27-1-53, from Cucurbitaceae; Dalhousie Square,